

## Calendar

### Thursday, May 4

**2:00 p.m.** Research Techniques Seminar  
- (Comitium)

Speaker: V. Saveliev, DESY/Obninsk University

Title: Silicon Photomultipliers: Recent Development and Application

**2:30 p.m.** Theoretical Physics Seminar - Curia II

Speaker: C. Bauer, Lawrence Berkeley National Laboratory

Title: Improving Jet Distributions with Effective Field Theory

**3:30 p.m.** DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

### Friday, May 5

**3:30 p.m.** DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

**4:00 p.m.** Joint Experimental Theoretical Physics Seminar - 1 West

Speaker: G. Bernardi, LPNHE, Universities of Paris VI and VII

Title: Searches for Higgs Bosons at DZero

For links to events, click [here](#).

## Weather



Partly Cloudy **69°/41°**

[Extended Forecast](#)

[Weather at Fermilab](#)

## Current Security Status

## Greene will talk to Congress members; you are invited



Brian Greene is the best-selling author of *The Elegant Universe* and *The Fabric of the Cosmos*. (Click on image for larger version.)

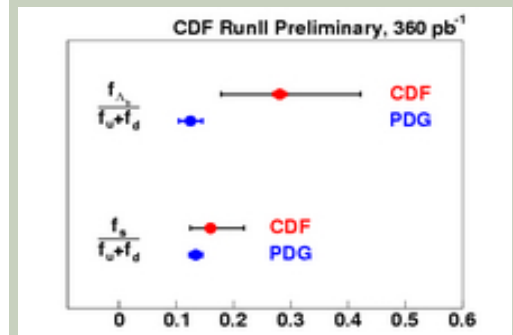
Renowned physicist and author Brian Greene will address the Congressional Research and Development Caucus Advisory Committee from 3:00 to 4:30 p. m. Tuesday, May 9, in the Cannon Caucus Room, 345 Cannon, Washington, D.C. The event is hosted by House Science Committee members Rep. Judy Biggert and Rep. Rush Holt, and is open to interested citizens. Greene's talk is titled "Reaching for Einstein's Dream: The Quest for the Deepest Laws of the Universe."

Einstein sought but never found a "unified theory" of the universe: a single, all-encompassing framework for explaining the cosmos. Today, scientists have picked up where Einstein left off and may well be closing in on the universe's deepest laws. Impressive theoretical developments are much in need of experimental input, providing fertile ground for revolutionary breakthroughs in our understanding of the universe.

[read more](#)

## Fermilab Result of the Week

### At the bottom of everything...



Comparison between CDF and Particle Data Group (PDG) world average for b quark fragmentation functions. The bottom two values compare the fraction "f" with which the bottom quark combines with a single strange quark, while the top two compare the fraction the bottom quark combines with two quarks to form a  $\Lambda_b$  baryon. The results are shown as ratios relative to the combined rate of the better-measured fragmentation to up and down quarks. (Click on image for larger version)

Sometimes, it's good to get to the bottom of everything, especially at the CDF experiment. A bottom quark produced in a proton-antiproton collision at the Tevatron cannot exist by itself. In a process called fragmentation, the energetic bottom quark excites the vacuum, creates additional quarks, and combines with them to form more stable two-quark or three-quark states. The rates at which it combines with an up, down, or strange quark to form a two-quark state--called a  $B^+$ ,  $B^0$ , or  $B_s^0$  meson, respectively--are referred to as b-quark fragmentation fractions. Included in these fragmentation fractions is also the rate at which a b-quark combines with a quark pair to form a three-quark state, a bottom baryon. In Run I of the Tevatron, CDF observed an intriguing enhancement of  $B_s^0$  meson production

[Secon Level 3](#)**Wilson Hall Cafe****Friday, May 5**

- Minnesota Wild Rice w/Chicken
- Tuna Melt on Nine Grain
- BBQ Ribs
- Sauteed Liver & Onions
- Buffalo Chicken Wrap
- Assorted Pizza
- Mandarin Chicken Salad

[Wilson Hall Cafe Menu](#)**Chez Leon****Thursday, May 4****Dinner**

- Crab Cakes
- Stuffed Flank Steaks
- Orzo with Arugula, Pine Nuts and Parmesan
- Profiteroles with Strawberries and Chocolate Sauce

**Wednesday, May 10****Lunch**

- Curried Turkey Salad w/Cashews on Field Greens
- Melon with Greens

[Chez Leon Menu](#)

Call x4598 to make your reservation.

**Search****Search the Fermilab Today Archive****Info****Pesky zebra mussels will get rude awakening next week**

This shopping cart resided in zebra mussel-infested waters for a few months. FESS engineer Anne Lucietto says the mussels will attach to almost any hard surface--"which could be a rock, a pipe...themselves." ([Click on image for larger version.](#))

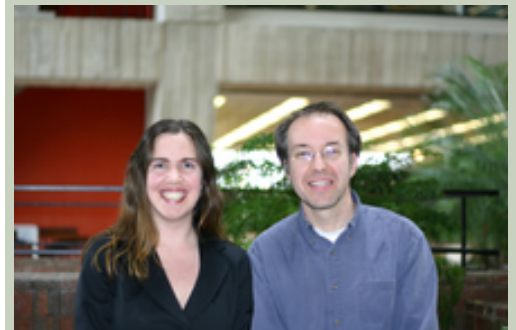
Between 7 and 8 a.m. on Monday, May 8, FESS engineers will inject a molluscocide into the intake pipe inside the maintenance building near Casey's pond to begin controlling the zebra mussel infestation of Fermilab's water cooling system. Small pumps will circulate the slimy biodegradable substance throughout the 20-plus miles of pipeline. "We're anticipating using less than 60 gallons for the entire system," said FESS engineer Anne Lucietto.

FESS chose this method because Fermilab's water system is connected to the ponds on the prairie. The molluscocide, designed to coat the gills of the zebra mussels, will not harm fish or birds and will be used up by the mussels within hours of injection into the system, making it more environmentally friendly in the long run than were other options for evacuating the mussels.

compared to results from the LEP e+e-collider, although the statistical power of the measurement was limited.

Large samples of semileptonic decays, in which the bottom quark decays to a charm quark plus a lepton and neutrino, are used to measure the fragmentation rate of B hadrons. The observed numbers of events with a lepton and charm combination are attributed to the B meson and baryon species through a method called sample composition.

CDF now observes the rate into two separate two-quark states, in particular into  $B^0_s$  mesons, in better accord with the previous LEP measurements. However, a more interesting development is found in the fragmentation rate of three-quark states ( $\Lambda_b$  baryons), which is now measured almost two standard deviations higher than previous results of this quantity. As it turns out, life at the bottom is exciting!



Carnegie Mellon graduate student Karen Gibson (left) and her adviser Manfred Paulini are getting to the bottom of bottom quark fragmentation fractions.

[Result of the Week Archive](#)**Announcements**

Fermilab Today is online at: <http://www.fnal.gov/today/>

Send comments and suggestions to [today@fnal.gov](mailto:today@fnal.gov)

[Fermilab Today archive](#)

[Hurricane Relief Page](#)

[Fermilab Today PDF Version](#)

[Fermilab Result of the Week archive](#)

[Fermilab Safety Tip of the Week archive](#)

[Linear Collider News archive](#)

[Fermilab Today classifieds](#)

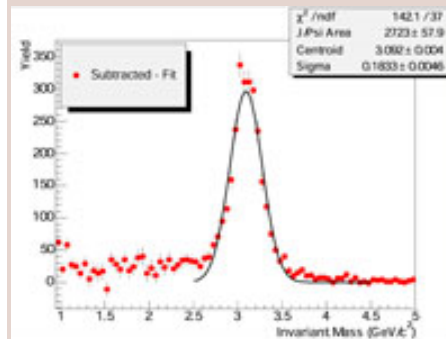
[Subscribe/Unsubscribe to Fermilab Today](#)

Engineers waited until May before using the molluscicide to give the mussels time to "awaken" from their winter hibernation. "Water temperature is pretty critical," Lucietto said. While hibernating, the zebra mussels' respiration rates slow down considerably, so a substance coating their gills would have little effect on them. With warmer, more stable water temperatures, the mussels will be more receptive to EVAC. After 12 to 15 hours of exposure, the mussel bodies will detach themselves from the shells. The maintenance crew will then flush out the shells using pre-selected fire hydrants throughout the site for a period of 2-3 weeks.

--Jennifer Lauren Lee

### Science Grid This Week

## PHENIX Data Fly With GridFTP



Mass spectrum of  $\mu + \mu^-$  pairs in the PHENIX detector showing clear evidence of the  $J/\psi$  resonance. *Image Courtesy PHENIX Collaboration.*

The hunt for the quark-gluon plasma, a state of matter that may have existed in the very early universe, is getting a little help from a common grid tool. During the current run of the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, the PHENIX nuclear physics experiment is using GridFTP to transfer data automatically between BNL and Vanderbilt University.

[Read More](#)

## EPP2010 Committee members to speak at Fermilab May 12

The EPP2010 report made headlines on Thursday. What does it say about the future of Fermilab? Find out more on May 12, when EPP2010 Committee member Chuck Shank and Committee co-chair Sally Dawson come to speak to the Fermilab community. They will discuss the report at a 1:30 p.m. meeting in the Ramsey Auditorium. Everyone at Fermilab is invited to attend.

## D Road tentatively scheduled to close today

D road is tentatively scheduled to be closed from Eola Road to the west end of CDF from around 10:00 a.m. to 12:00 p.m. today, May 4, to prevent traffic from driving on wet tar. At all times during the 5-day repaving project (see [yesterday's announcement](#)), motorists should consider using [alternate routes](#) to get around the site. Motorists using D Road or accessing the CDF and Industrial areas should slow down, obey traffic control personnel and expect delays. The timing of this road closing may change due to weather conditions.

## Batavia Road entrance to close for cars and bicycles

The Batavia Road entrance will be closed for renovation from 7:00 a.m. on Tuesday, May 9, to 4:00 p.m. on Monday, May 22. During this time, the City of Warrenville will also be repaving roadways and carrying out other construction work along Batavia Road. Delays are expected to continue until early June, even after the entrance re-opens. Drivers and bicyclists should use Pine and Wilson Street entrances until the work is completed. For more information, contact Tom Prosapio at

**In the News*****The Timberjay, May 3, 2006:*****Tours of MINOS lab at Soudan offered on May 6**

They're really, really tiny, but they do have mass.

That's the word from the MINOS lab at the Soudan Underground Mine State Park, where the public is invited to come for a free tour on Saturday, May 6 from 8:30 a.m. - 4:00 p.m. Tours will start every ten minutes, and are first-come, first-serve.

This will be the 16th year that scientists at the Soudan Underground Mine State Park have opened up their labs to the public, and the tours this year will focus on the first published findings from the MINOS experiment.

[Read More](#)

[prosapio@fnal.gov](mailto:prosapio@fnal.gov)

**I Solisti della Scala Trio, May 5**

Tomorrow, May 5, The Cultural Association of Italians at Fermilab will present I Solisti della Scala Trio in concert at the Ramsey auditorium. The trio is composed of world famous musicians Francesco Di Rosa, Fabrizio Meloni, and Nazzareno Carusi, who will perform excerpts from various operas on oboe, clarinet and trombone. The concert will be in the Ramsey Auditorium at 8:00 p.m. and tickets are \$20. For more information or telephone reservations, call 630/840-ARTS (2787) weekdays between 9 a.m. and 4 p.m.

**Artist Reception**

There will be an artist reception for Keith Gerling and Miles Lowry tomorrow, May 5, from 5-7 p.m. in the Fermilab Art Gallery on the 2nd floor Wilson Hall. Everyone is invited.

[Upcoming Activities](#)